

URS CONSULTANTS, INC.

62770.19.20.211
29.b1

MEMORANDUM

To: Monica Rolluda, HW-114, US EPA, Region 10

From: Jeff Kesner, ARCS Site Lead, URS Consultants, Inc. *gmk*

Date: September 3, 1993

Subject: Site Inspection Prioritization Recommendation for the Weyerhaeuser Chlor-Alkali Plant, Longview, Washington (CERCLIS No. WAD009041450)

Reference: Contract No. 68-W9-0054
Work Assignment No. 54-18-OJZZ

Priority Assessment

No further remedial investigation is warranted at this time under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) based on the fact that primary sources of contamination at the site (mercury cell rooms, surface impoundments, etc.) have been removed from the plant and potential secondary sources (contaminated soils and concrete) have been either disposed of at Chemical Waste Management's Class I Hazardous Materials Facility at Arlington, Oregon; stabilized on site with specifically engineered remedial devices; or covered with clean fill. Additionally, the Industrial Section of Washington State Department of Ecology (Ecology) is overseeing the remedial investigation/feasibility study (RI/FS) activities at the site.

Recommendations

- Request from Ecology copies of the final RI/FS report and any other reports pertaining to the facility cleanup.

USEPA SF



1424461

MEMORANDUM

To: Monica Rolluda, HW-114, US EPA, Region 10

From: Jeff Kesner, ARCS Site Lead, URS Consultants, Inc. *JK*

Date: September 3, 1993

Subject: Site Inspection Prioritization Report for the Weyerhaeuser Chlor-Alkali Plant, Longview, Washington
(CERCLIS No. WAD009041450)

Reference: Contract No. 68-W9-0054
Work Assignment No. 54-18-OJZZ

INTRODUCTION

Pursuant to United States Environmental Protection Agency (EPA) Contract No. 68-W9-0054, URS Consultants, Inc. (URS) conducted a Site Inspection Prioritization (SIP) of Weyerhaeuser's former chlor-alkali plant in Longview, Washington. The purpose of this SIP is to determine the potential threat of this hazardous waste site to public health and the environment based on an evaluation of the site's hazardous waste handling practices and on recent information about the site and the surrounding environment. The information in this report will help the EPA determine if the site is eligible for further investigation under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

SITE DESCRIPTION AND OWNERSHIP

The chlor-alkali plant is located at 3000 Industrial Way in Longview, Washington, on the north bank of the Columbia River in Section 31, Township 8 N, Range 2 W, Willamette Meridian, at latitude 46°07'46.0" N and longitude 122°59'24.0" W (Ecology 1986). The site is part of Weyerhaeuser's 28-acre saw and pulp mill complex. The complex is situated in a heavily industrialized corridor along the northern bank of the Columbia River (USGS 1986). A portion of the plant site was originally a 300-foot-high basalt promontory (a peak of high land that juts out into a body of water) that provided a

source of gravel for the roads in the Longview area and rocks for jetties at the mouth of the Columbia River (CH2M HILL 1992). Figure 1 shows the site layout.

The chlor-alkali plant is owned by the Weyerhaeuser Corporation, whose corporate offices are in Tacoma, Washington.

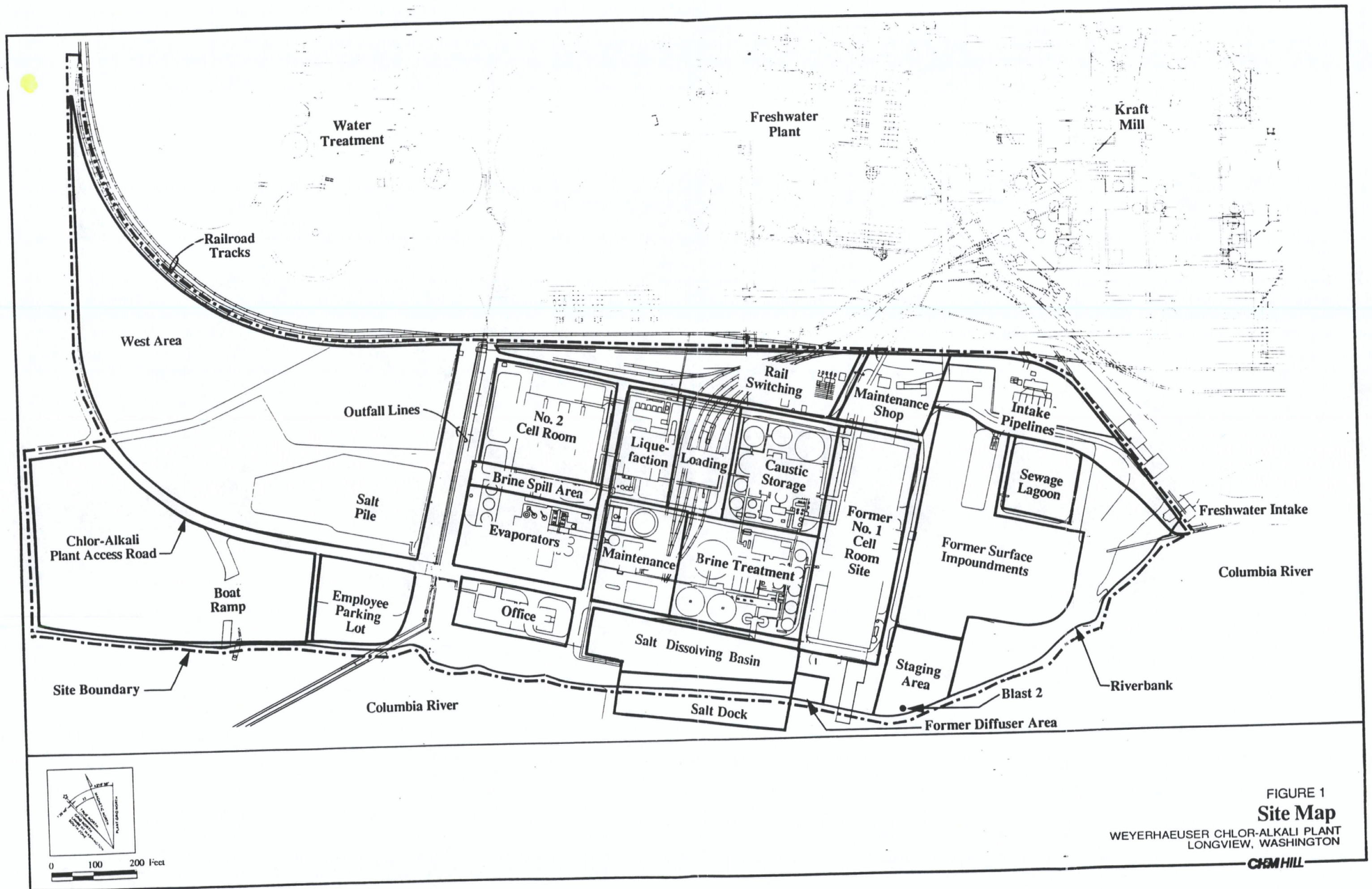
FORMER OPERATIONS

The chlor-alkali plant, which became operational in 1958, produced chlorine gas and caustic soda that was then used in the bleaching process of wood pulp at the adjacent Weyerhaeuser pulp mill (Ecology 1986).

The mercury cell process was used to separate sodium and chlorine ions from purified salt. Brine was introduced into electrolytic mercury cells, where an electric current was passed through from graphite anodes to mercury cathodes. This electrolytic action broke down salt into its elemental components of sodium and chlorine. Chlorine emitted at the graphite anode of the cell was collected, cooled, and compressed into a liquid state for transport in rail tankcars or for immediate use. Mercury and sodium were moved into a decomposer where water was introduced. The water reacted with sodium to create a 50 percent sodium hydroxide solution. Mercury was then returned to the cell for reuse. The caustic reaction in the decomposer released hydrogen gas that contained high levels of mercury vapor. The hydrogen gas was cooled, passed through a demister (to remove the mercury vapor), and then released to the atmosphere. Mercury was returned to the chlorine cell. Spent brine leaving the cell was collected and pumped to holding tanks. Raw sodium chloride was added to the spent brine to achieve a 100 percent saturation of pure sodium chloride. The "new" brine was passed through two clarifiers to allow settling before being reused in the cells. The sludge collected from these clarifiers was eventually pumped to one of seven on-site surface impoundments via a wooden flume. During a 1973 site inspection by EPA officials, considerable amounts of liquid mercury were observed in the flume between the clarifiers and the sludge ponds (EPA 1973).

Two mercury cell rooms were used during the life of the plant: the No. 1 Cell Room, which operated from 1958 to 1976, and the No. 2 Cell Room, which operated from 1966 to 1976 utilizing the mercury-based process (CH2M HILL 1992). In 1976, work was completed on converting the No. 2 Cell Room to a diaphragm cell operation, which does not use mercury.

From 1958 to 1966, effluent from the No. 1 Cell Room (containing up to 93.5 pounds of mercury per day) was discharged to a ditch that emptied into the Columbia River. In 1966, a diffuser (pipe) was installed in the river to facilitate direct discharge of the effluent below the surface of the water. From 1966 to 1976, effluent from the No. 2 Cell Room was discharged through an outfall equipped with a diffuser. The only documented



spill from the No. 2 Cell Room occurred when a pipe leaked brine solution on the south side of the building (CH2M HILL 1992).

PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

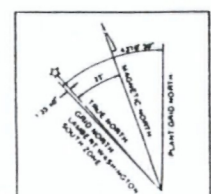
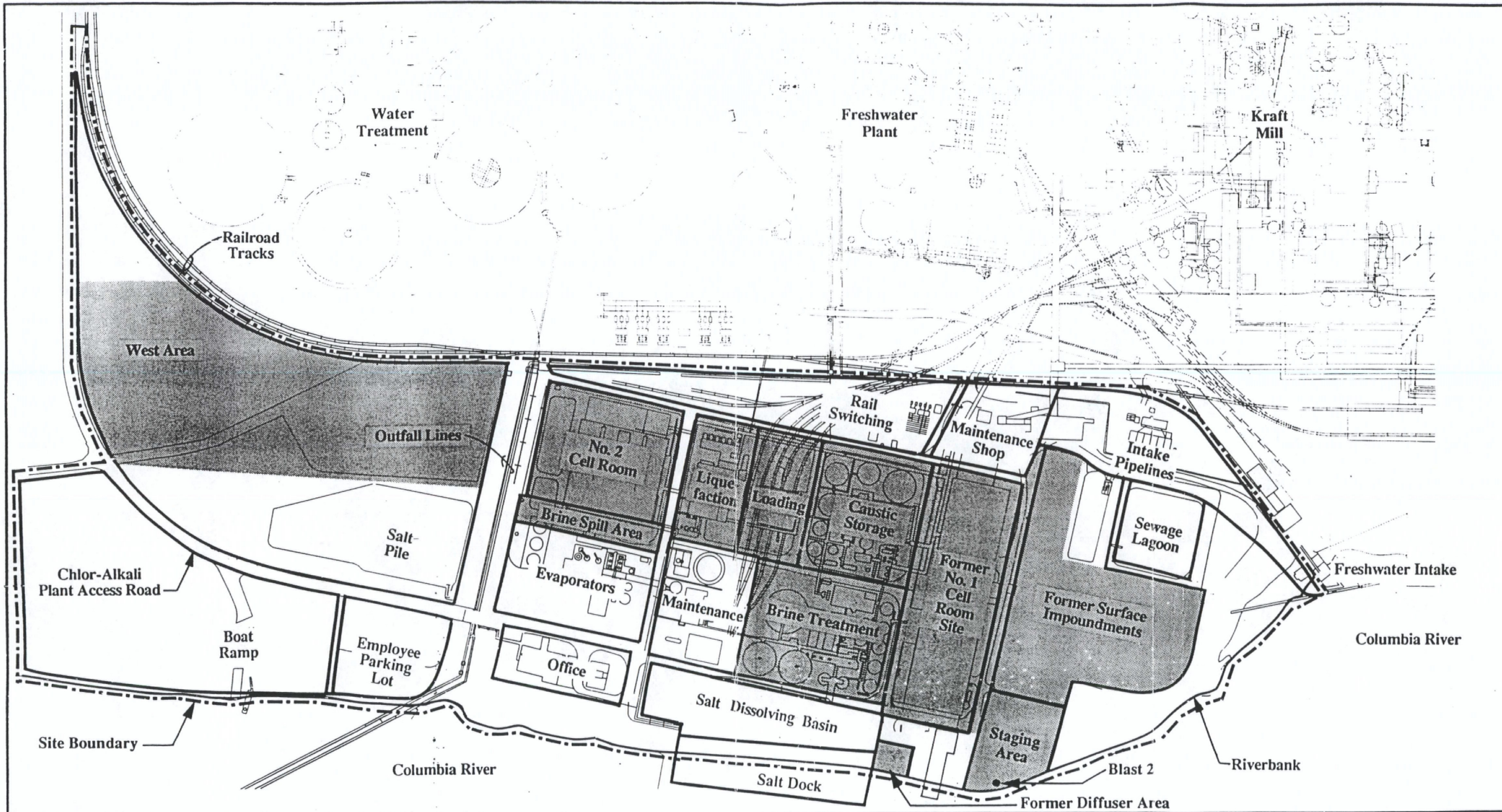
Since 1966, at least 20 geotechnical and environmental investigations have been conducted at the chlor-alkali plant. The scope of this memorandum allows only a brief overview of the major investigations and remedial actions. Approximately 70 percent of the on-site surface soils in the areas of concern (Figure 2) have been sampled for mercury. Shallow groundwater beneath most of the plant has been sampled for mercury as well (CH2M HILL 1992).

Since 1972, a number of remedial actions have taken place at the chlor-alkali plant, resulting in the removal of approximately 54,000 tons of mercury-contaminated sludges, pond liners, dust, demolition debris, water, and soil. Some of the remedial actions taken at the site include the following (CH2M HILL 1992):

- Removal of approximately 10,000 tons of sludge from the surface impoundment area in 1972, 1973, and 1974, and removal of another 24,000 tons of sludge, pond liners, and subsoils in 1976 and 1977
- Removal of approximately 119 tons of soil containing mercury from the brine spill area near the No. 2 Cell Room in 1990 and 1991
- Removal of approximately 14,368 tons of mercury-contaminated concrete and soils from the No. 1 Cell Room in 1990 and 1991
- Closure of the No. 1 Cell Room through placement of clean backfill, construction of a rainwater collection system, and capping of the area with a polymer modified asphalt (PMA) seal under a 1991 order with Ecology
- Removal of the No. 1 Cell Room diffuser from the Columbia River in March 1992.
- Removal of approximately 72 tons of soil and concrete from the No. 2 Cell Room

REGULATORY OVERVIEW

A consent decree was negotiated between Weyerhaeuser and the EPA for closure of the No. 1 Cell Room and conversion of the No. 2 Cell Room to a diaphragm cell (i.e., non-mercury) starting in 1974 (CH2M HILL 1992).



0 100 200 Feet

Legend



Areas with known or suspected releases of mercury

FIGURE 2
Potential Areas of Concern

WEYERHAEUSER CHLOR-ALKALI PLANT
LONGVIEW, WASHINGTON

CH2M HILL

A CERCLA Notification of Hazardous Waste Site form was completed on June 17, 1982, indicating that burial of an estimated 2,000 cubic yards of mercury-contaminated material was suspected in the western area of the site (Ecology 1986).

A Potential Hazardous Waste Site Preliminary Assessment (PA) performed by Ecology on January 22, 1985, recommended that the site be given "medium" priority. Based on past waste handling practices, a site inspection was warranted for the facility to determine the extent of mercury and zinc contamination of soils, groundwater, river sediments, and resident fish (Ecology 1986).

In response to the Ecology PA, Weyerhaeuser submitted a report to the Washington Department of Ecology, *Assessment of the Environmental Effects of the Residual Mercury Near the Longview Chlor-Alkali Plant*, in July 1986. Sampling was conducted in February 1986 and included site effluent, site runoff, Columbia River water, site soils and river sediments, fish tissue samples from upstream and downstream of the plant, and groundwater samples from existing wells on the plant property. Samples were analyzed for total metals and for Resource Conservation and Recovery Act (RCRA) EP-Toxicity metals (Ecology 1986).

- River sediments concentrations for total mercury adjacent to the site ranged from 0.15 to 0.73 mg/kg and downstream of the site (< 0.05 to 0.07 mg/kg). Concentrations of mercury from the plant ranged from < 0.05 to 0.26 mg/kg. The highest concentration was taken upstream from the mouth of the Kalama River.
- Fish tissue samples from resident fish ranged from 0.03 to 0.12 mg/kg residual mercury (1986 EPA limit of 0.5 mg/kg mercury) and values did not differ significantly from either upstream or downstream sample stations.
- Soil samples from two stations on the plant property showed a broad range of residual mercury. Mercury concentrations east of the plant ranged from 0.7 to 27 mg/kg. The stations to the west of the plant (downriver) showed values from < 0.05 to 16 mg/kg. The western location is where demolition wastes from the former No. 1 Cell Room allegedly were buried in the mid-1970s. Because RCRA EP-Toxicity analyses showed no detectable mercury in any of the soil samples, Weyerhaeuser concluded that mercury in on-site soils was not highly mobile (Ecology 1986).
- Groundwater samples indicated that mercury and zinc were below detection limits in the two on-site wells.

Because the Weyerhaeuser assessment indicated negligible impact from site operations, the company requested that the plant be removed from the state's active CERCLA sites

list. In a 1987 Site Inspection Report (SIR), Ecology accepted Weyerhaeuser's proposal to delist the site contingent upon (1) quarterly groundwater monitoring in the western area (because mercury was above maximum contaminant levels [MCLs] in two of the four monitoring wells [MW-3 and MW-4], (2) sampling in the eastern portion of the site to quantify mercury contamination, and (3) completion of a property deed notification (CH2M HILL 1992).

In 1989, Ecology issued an addendum to the SIR of 1987, concluding that no further action was necessary. However, Ecology's Industrial Section requested that groundwater monitoring be continued for 2 years (Ecology 1989).

During demolition of the No. 1 Cell Room from 1990 to 1991, Weyerhaeuser discovered mercury in soils beneath the concrete floor. Based on this new discovery, Ecology relisted the plant in February 1991 and requested that Weyerhaeuser conduct a Model Toxics Control Act (MTCA) remedial investigation and feasibility study (RI/FS) of the site (CH2M HILL 1992).

In 1991, a limited field investigation and mercury hot-spot removal program were implemented to gather information to focus the RI/FS. The removal action was conducted to swiftly dispose of soil and debris containing mercury at concentrations higher than the RCRA high mercury threshold concentration of 260 mg/kg, prior to enactment of the May 1992 land disposal restrictions.

POTENTIAL AREAS OF CONCERN

The potential areas of concern for the CH2M HILL RI/FS are listed below for each media.

SOILS

Former Surface Impoundment Area

Even after Weyerhaeuser removed tens of thousands of tons of contaminated sludge, pond liners, and subsoils in the 1970s, subsurface soil samples collected in 1991 detected total mercury of 237 mg/kg at 4 feet bgs. According to the April 1992 RI/FS Work Plan, this site will be the focus of continued remedial investigation (CH2M HILL 1992).

Brine Spill Area

Subsequent to soil removal activities at this site, in 1991 a 15,000 mg/kg concentration of mercury was detected in one of the subsurface soil samples adjacent to an aboveground storage tank (AST). Soil around this hot spot was removed; however, no confirmation samples were taken because of heavy rains and a concern for the structural integrity of

the AST foundation. The soils around the high mercury concentration will be the focus of continued remedial investigation (CH2M HILL 1992).

Former No. 1 Cell Room

Post-demolition sampling of this structure in June 1991 revealed an average mercury soil concentration of 38 mg/kg. The site was closed by satisfying Ecology's requirement of placing an impermeable barrier over the site. Placement of a PMA seal completed closure of the site by the December 31, 1991, deadline (CH2M HILL 1992).

Former No. 2 Cell Room

In the fall of 1991, 60 tons of soil were removed by Chemical Waste Management around three hot spots in this area. Wastes were transferred to Arlington, Washington, for disposal in the Class I landfill. Mercury concentrations before removal were as high as 468 mg/kg. Confirmation sampling indicated that the highest concentration remaining in this area was 72.8 mg/kg. The soils around the high mercury concentration will be the focus of continued remedial investigation (CH2M HILL 1992).

Caustic Storage Area

Sample results from September 1991 showed mercury concentrations as high as 234 mg/kg in this area. Approximately 6 to 8 inches of soil were removed from the areas with the highest mercury concentrations. Confirmation sampling indicated mercury was present at a concentration as high as 185 mg/kg. This area will be the focus of continued remedial investigation (CH2M HILL 1992).

Brine Treatment Area

Mechanical presses used to recapture brine and dewater sludge were used on the brine sludge in this area and may have released mercury-contaminated liquids to the surrounding soils. Preliminary soil sampling in the fall of 1991 showed that mercury was as high as 206 mg/kg, which is near the RCRA threshold concentration of 260 mg/kg for land disposal. The high mercury concentrations were detected in soils exhibiting a reddish color. Soils was removed from areas exhibiting this color because they were similar to the brine sludges known to have high mercury concentrations that were removed from the surface impoundment area. Confirmation sampling after soil removal showed the highest concentrations of mercury at 77.9 mg/kg. This area will be the focus of continued remedial investigation (CH2M HILL 1992).

GROUNDWATER

Former No. 1 Cell Room and Former Surface Impoundment Area

Analysis of groundwater from the shallow aquifer has shown that the highest concentrations of total and dissolved mercury occur in the alluvium and basalt formation underlying the former No. 1 Cell Room and former surface impoundment area. Mercury concentrations have been as high as 4.29 mg/L, consistently exceeding the primary MCL of 0.002 mg/L. As a result, this area will be the focus of continued remedial investigation (CH2M HILL 1992).

SURFACE WATER

Columbia River

In 1986, 10 surface water samples were taken from various locations as far as 3 miles upstream and 2 miles downstream on the Columbia River and were analyzed for mercury. Mercury was not detected in any of the surface water samples using a detection limit of 0.0002 mg/L (Weyerhaeuser 1986). No further investigation during the RI/FS is planned for the Columbia River.

SEDIMENTS

On-Site Drainage Ditch

On-site sediment samples were collected in 1987 from a drainage ditch on the north side of the former surface impoundment area. The lower portion of the ditch (near the river) had a total mercury concentration of 35 mg/kg. This area will be the focus of continued remedial investigation (CH2M HILL 1992).

Columbia River

In 1986, Columbia River sediments were collected adjacent to the site and as far as 3 miles upstream and 2 miles downstream of the site. The highest upstream mercury concentration was 0.26 mg/kg. The highest mercury concentration adjacent to the site was 0.73 mg/kg. The highest mercury concentration downstream of the site was 0.07 mg/kg.

In early 1992, Weyerhaeuser began an independent cleanup action for the former No. 1 Cell Room diffuser. Initial sediment samples taken in March 1992 indicated that low levels of mercury were present in freshwater sediments. Concentrations of mercury ranged from ND (<0.2 mg/kg) to 0.6 mg/kg. After the diffuser was removed, five final sediment samples and one duplicate were collected from the same locations as the initial samples. Concentrations of mercury ranged from 0.3 to 7.2 mg/kg. During the

demolition of the outfall pipe it was discovered that the bottom of the pipe had holes in it. Subsequently, CH2M HILL decided to excavate soil down to the elevation of the ordinary high water mark. CH2M HILL indicated that soil containing mercury above 24 mg/kg was present below the ordinary high water mark after excavation. This, in addition to the presence of a reddish-colored material 3 feet above the bottom of the excavation prompted CH2M HILL to continue remediation of riverbank soils. In an attempt to remove the discolored soil, the excavation was continued to the east and an additional foot of soil was removed from the bottom of the excavation. Six samples were collected and analyzed for mercury. Results indicated a range in concentration from 88 to 339 mg/kg mercury. Based on these results CH2M HILL decided to remove the soils from the riverbank until bedrock was encountered at 3 to 4 feet below the ordinary high water mark.

After 42 cubic yards of concrete were laid upon the basalt bedrock, four final samples were collected from the outside edges of the concrete. Results indicated a range of mercury concentrations from 1.5 to 12.6 mg/kg. Sand and rock were used to rebuild the river bank in the area of the excavation. A total of 1,168 tons of soil, sediment, and debris including the diffuser were transported to Chemical Waste Management's Hazardous Waste Disposal Facility in Arlington, Oregon (CH2M HILL 1992b). No further investigation during the RI/FS is planned for the Columbia River (CH2M HILL 1992).

AIR

During demolition of Cell Room No. 1, Harding Lawson Associates conducted air monitoring to assess the effectiveness of suppression measures implemented during the dismantling process. Air monitoring for mercury, asbestos, and total suspended particulates indicated that no releases exceeded project-specific stop-work levels (CH2M HILL 1992).

REMEDIATION GOALS

According to the draft RI/FS Work Plan prepared by CH2M HILL, the preliminary remediation goals based on MTCA for soils and groundwater at the Weyerhaeuser plant are 1 to 1,050 mg/kg and 0.002 mg/L mercury, respectively. Goals for mercury-contaminated sediments from the stormwater drainage ditch east of the former surface impoundment area will be risk based because no applicable cleanup level exists at this time (CH2M HILL 1992). Guidance documentation by Ecology indicates mercury levels in moderately polluted areas are generally less than 2.0 for freshwater sediments (Ecology 1991).

CURRENT REGIONAL INFORMATION

Net precipitation for the area has been calculated at 30 inches (NOAA 1991) (Appendix A).

Annual fisheries production for salmon in the lower Columbia River is approximately 40 pounds per river mile (WDF 1988).

The residential population within 4 miles of the site is approximately 57,150 (USDC 1990) (Appendix B).

One surface water intake has been identified approximately 6 miles downriver from the site. The intake is reportedly used for irrigation of 1 acre and as a drinking water source (WRIS 1993) (Appendix C).

Bald eagles (*Haliaeetus leucocephalus*) have been identified between 2 to 3 miles and 3 to 4 miles from the Weyerhaeuser complex.

REFERENCES

- CH2M HILL. 1992. *Draft Remedial Investigation and Feasibility Study Work Plan for the Chlor-Alkali Plant, Longview, Washington*. Prepared for the Weyerhaeuser Corporation. April 1992.
- . 1992b *Independent Cleanup Action Report, Former No. 1 Cell Room Diffuser Removal*. Prepared for Weyerhaeuser Chlor-Alkali Plant, Longview, Washington. April 1992.
- National Oceanic and Atmosphere Administration (NOAA). 1991. *Climatological Data for Longview, Washington, 1992. January-December 1991*. 95:1-12 Government Publications.
- United States Department of Commerce (USDC). 1990 *Census of Population and Housing Summary for City of Longview, Longview Heights, West Longview, and Kelso, Washington, 1990*. Bureau of the Census.
- United States Environmental Protection Agency (EPA). 1973. *Field Investigation of Weyerhaeuser Chlor-Alkali Plant, Longview, Washington*. January 10, 1973.
- United States Geological Survey (USGS). 1986. 7.5 minute topographic map of Kelso, Washington.
- Washington State Department of Ecology (Ecology). 1991. *Summary of Criteria and Guidelines for Contamination of Freshwater Sediments*.
- . 1989. *Phase II Site Inspection Report Addendum, Weyerhaeuser Chlor-Alkali Plant, Longview, Washington*. January 1989.
- . 1986. *Phase I Site Inspection Report, Weyerhaeuser Chlor-Alkali Plant, Longview, Washington*. November 1986.
- Washington State Department of Fisheries (WDF). 1988. *Sport Catch Report*.
- Washington Water Rights Information System (WRIS). 1993. Printout for area around Weyerhaeuser Chlor-Alkali Plant. June 22, 1993.

APPENDIX A
NET PRECIPITATION FOR LONGVIEW

URS CONSULTANTS, INC.

Calculation for Net Precipitation

Date: 06/09/93 Individual entering data: Michelle M. Sortino
 Site: Weyerhaeuser, Longview Temperature data in C or F: F
 Latitude: 46 07' 46" Data in Temperature (D) or Evap. (E): D
 Longitude: 122 59' 24" >Latitude (50,45,40,35,30,20,10,0): 45.00

Source: National Oceanic and Atmospheric Administration, 1991
 Climatological Data, Washington State, (95-12), Dec 1991
 Longview Station

(Fill in only the shaded spaces)

Monthly Variables: Enter what is available

Month	Degree (C or F)	Precipitation	Evaporation
Jan	38.60	6.96	
Feb	42.60	4.41	
March	44.70	4.48	
April	49.10	3.30	
May	54.70	2.36	
June	59.70	1.99	
July	64.10	0.85	
Aug	64.20	1.58	
Sept	60.80	2.21	
Oct	53.20	4.07	
Nov	45.00	6.28	
Dec	40.70	7.65	

Average Annual Precipitation 46.14 inches

NET PRECIPITATION = 30.00 INCHES

Calculated Variables

Variable T	Variable I
3.78	0.65
5.89	1.28
7.06	1.69
9.50	2.66
12.61	4.10
15.39	5.55
17.83	6.94
17.89	6.98
16.00	5.89
11.78	3.69
7.22	1.75
4.83	0.95

Total I	Variable a
42.13	7541.35

Difference Variables

Variable F	Variable E
0.80	0.42
0.81	0.71
1.02	1.10
1.13	1.71
1.28	2.67
1.29	3.37
1.31	4.04
1.21	3.75
1.04	2.84
0.94	1.81
0.79	0.87
0.75	0.53

Precip-Evap.	Positive P-E
6.54	6.54
3.70	3.70
3.38	3.38
1.59	1.59
-0.31	0.00
-1.38	0.00
-3.19	0.00
-2.17	0.00
-0.63	0.00
2.26	2.26
5.41	5.41
7.12	7.12

TOTAL
30.00

Calculation performed according to HRS Final Rule

(40 CFR Part 300), Section 3.1.2.2 using the following formula:

Net Precipitation = Monthly Precipitation - Evapotranspiration (E)

$E(\text{Jan..Dec}) = 0.6 * F(\text{Jan..Dec}) [10T(\text{Jan..Dec})/I]^a$

Variables:

$E(\text{Jan..Dec})$ = Monthly potential evapotranspiration, if $E < 0$ then $E = 0$ is used

$F(\text{Jan..Dec})$ = Monthly latitude adjusting value

$T(\text{Jan..Dec})$ = Mean monthly Temperature (Centigrade)

$I = \text{Sum}[T(\text{Jan..Dec})/5]^1.514$

$a = 6.75 * (10^{-7}) * (I^3) - 7.71 * (10^{-5}) * (I^2) + 1.79 * (10^{-2}) * I + 0.49239$

APPENDIX B
RESIDENTIAL POPULATION FOR LONGVIEW

No homes were located on the USGS topographic map for Kelso within 0.5 mile of the site.

0.5 to 1 mile: $62 \text{ homes} \times 2.91 \text{ persons per residence} = 180$

1 to 2 mile: $50\% \text{ of Longview } (18,985) + \text{outliers } (2,000) = 20,985$

2 to 3 mile: $50\% \text{ of Longview } (18,985) + \text{outliers } (2,000) = 20,985$

3 to 4 mile: $100\% \text{ of Kelso } (11,820) + \text{outliers } (3,180) = 15,000$

APPENDIX C

**WASHINGTON WATER RIGHTS INFORMATION SYSTEM
PRINTOUT**



DCL#: 62770.19.198 1993
FILE NO. 29.C
CC:
PM DPM SM XC/SM FILEX

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

P.O. BOX 47600 • Olympia, Washington 98504-7600 • (206) 459-6000

June 25, 1993

RECEIVED

JUN 28 1993

Mr. Jeff Kesner
URS Consultants, Inc.
Seattle Operations
1100 Olive Way, Ste. 200
Seattle, WA 98101

URS CONSULTANTS

Dear Mr. Kesner:

Enclosed you will find the Primary Water Rights Reports per your request on June 21. I have included the selection criteria tables for sections/townships/ranges. The reports include all water right information within these geographic areas as found in the Water Right Information System (WRIS). The most recent data update was May 31, 1993. I have also enclosed an example brochure and attachment to assist in deciphering the reports.

Please note that Washington State Law (RCW 42.17.260(s)) prohibits the usage of this material for commercial purposes or to give or provide access of this material to others for commercial purposes.

If I can be of any further assistance, please call me at (206) 438-7618.

Sincerely,

Linda M. Kiefer
Water Resources

LK
Enclosures

WATER RIGHTS REQUEST ATTACHMENT

When processing your request for "Active Water Rights", the standard procedure will be to provide you with lists that include the following:

APPLICATIONS - Applications are not water rights but are included in this report for completeness. The assumption is that someone interested in active rights would also be interested in the pending applications for a water right. The Ecology regional office that accepted the applications may be able to provide some guidance in a broad sense on what is the probable fate of applications in a given area.

PERMITS - Permits are probable water rights. When an application has been permitted, it means Ecology has determined that a certificate could be issued. If the conditions of the permit are met, a certificate will be issued.

CERTIFICATES - Certificates are water rights. Ecology is aware that some certificates are no longer being fully exercised and could be partly or completely relinquished for nonuse. Relinquishment is a formal process, however, and until such an action is taken, a certificate is considered active and represents a water allocation.

CLAIMS - Water right claims filed under the Water Right Claims Registration Act (Chapter 90.14 RCW) are not water rights. However, there are old (pre state water law) rights represented by many of the claims. This list of claims is provided because of the possible rights that it represents. It is important that you understand both the need to consider these as possible rights and that they are not confirmed water rights.

NOTE: Reports can be tailored to exclude any of these items. Just let us know at the time you request a report.

Page 1

CONTROL #		SEC #	OLD APPL	OLD PERM	OLD CERT	DATE OF PRIORITY	S C A T C M	CNTY	PERMIT DATE	NAME	SOURCE OF APPROPRIATION	TRIBUTARY OF
# OF R PTS P	LOC. OF POD/POW	(CHG C#)	PURPOSE OF USE	USE TYPE	INST OI	C R S M U U	ANNUAL C R S Q A M U U	IRR C S PRO- ACC M U VISOS	TIME OF R R R USE I A C			

TOWNSHIP - 18 RANGE - 10 E

SZ*06508C	22	06508	06179	04701	09/12/96Z		PIER	03/25/96Z	FIRGROVE MUTUAL	ROCK CR	CHEHALIS R
1 NW4NW4					DOMESTIC MULTIPLE	C	0.5	C 3	50.0	3	\$
					STOCKWATER	C	0.5	C 3	50.0	3	\$
					IRRIGATION	C	0.5	C 3	50.0	3	\$ 20 04011001

CONTROL 0

Number used to identify water rights in WRIS. The letters S, G, and R, at the beginning of the number, denote surface, ground, and reservoir water rights. The second character of the control number denotes the Region in which the water right was issued. Our example is from Region 2, SWRO. The letter at the end of the number denotes the stage of perfection (A=Application, P=Permit, and C=Certificate are used most frequently) of the water right.

SEC

Denotes section, within a township and range, that the point, or points, of diversion or withdrawal are located. In our example, the township is 18N, the range is 10E, and the section number is 22.

OLD OLD OLD
APPL PERM CERT

These represent Application, Permit and Certificate numbers that were assigned by Ecology prior to the development of the current system (which tracks information by CONTROL #).

**DATE OF
PRIORITY**

Date of filing of a water right application with the Department of Ecology. The year is designated by three digits. In our example, 962 represents 1962.

SCA
TCH

Internal tracking parameters, designating water right status, change of certificate, and adjudication class number. Most frequently used status codes are (Q) relinquishment, (C) cancelled permit, and (R) rejected application.

CNTY

A four letter code which indicates the county in which the point of diversion or withdrawal is located (PIER = PIERCE Co.).

PERMIT
DATE

Date permit was issued. The year is designated by 3 digits. In our example, 963 represents 1963.

NAME

The name of the applicant, permittee, certificant depending on the stage and type of record, is entered in this field last name first followed by initials or first name. In our example, the NAME is FIRGROVE MUTUAL.

SOURCE OF APPROPRIATION

The name, if known, of the surface water source, or type of source if unnamed, for surface water records. For ground water records, the source is indicated as being a well, or sump. In our example, the SOURCE OF APPROPRIATION is ROCK CREEK.

TRIBUTARY

For surface water records, this field refers to the name, if known, of the stream or other surface water body to which the source flows, if any. In our example, the source is a TRIBUTARY OF the CHEHALIS RIVER.

*example comes from SEC72, TIR R10E which is located in Region 2 (SUPO) WATER RESOURCES DIVISION, AREA 10

Example Printout of a Primary Report from the Water Rights Information System (WRIS)

Page 2

RECORDED WATER RIGHTS OF THE DEPARTMENT OF ECOLOGY REGION 2

PAGE 00

REPORT DATE 02/28/89

CONTROL # SEC OLD OLD OLD DATE OF S C A CNTY PERMIT NAME SOURCE OF APPROPRIATION TRIBUTARY OF
APPL PERM CERT PRIORITY T C M DATE

OF R LOC. OF POD/POW (CHG C#) PURPOSE OF USE USE INST C R S ANNUAL C R S IRR C S PRO- TIME OF R R R
PTS P M U U M U U ACC M U VISOS USE I A C

WATER RESOURCE INVENTORY AREA- 10

TOWNSHIP - 18 RANGE - 10 E

S2*06508C 22 06508 06179 04701 09/12/962

1 NW4NW4

DOMESTIC MULTIPLE
STOCKWATER
IRRIGATION

PIER 03/25/963 FIRGROVE MUTUAL ROCK CR

C
C
C

0.5 C 3
0.5 C 3
0.5 C 3

50.0 3
50.0 3
50.0 3

20
\$
\$
\$

CHEHALIS R

04011001

LOC. OF POD/POW

This field is used to describe land subdivisions that completely encompass the location of the point(s) of diversion or withdrawal. In our example, the land subdivision is the NW¼ of the NW¼ of section 22.

PURPOSE OF USE

The authorized or proposed uses of water under each water right are indicated in this field. There can be multiple purposes of use for a given water right. In our example, we site three different uses.

USE
TYPE

This field indicates whether the diversion of water for each use has a (C) consumptive, (P) partially consumptive or (N) non-consumptive effect on the source of supply.

INST
QI

Instantaneous Quantity: For surface water rights, the authorized instantaneous rate of diversion is stated in cubic feet per second (C) for each purpose of use. For ground water rights, the authorized instantaneous rate of withdrawal is stated in gallons per minute (G) for each purpose of use. These quantities are not necessarily additive. In our example, the QI = 0.5 CFS.

C R S
M U U

Internal tracking parameters which indicate if a water quantity is in Common (C), Re-use (R), or Supplemental (S) to other purposes of use.

ANNUAL
QA

For both surface water and ground water rights, the authorized total annual diversion is stated in acre-feet per year for each purpose of use. For reservoir storage rights, the authorized annual storage volume is stated in acre-feet per year. In our example, QA = 50.

IRR
ACC

Where irrigation is specified as a purpose of use, the maximum irrigated land area authorized is indicated in acres. In our example, the maximum number of irrigated acres is 20.

PRO-
VISOS

Certain standard informative statements, restrictions or provisions are often included on state issued permits and certificates. These are tracked by letter codes in this field (R for access port, S for screening, \$ for general information, etc.).

TIME OF
USE

An entry in this field denotes the period of time during a year when water may be diverted or withdrawn for a specific purpose of use. A blank field indicates continuous use. In our example, 04011001 denotes April 1st to October 1st (1S denotes during irrigation season).

R R R
I A C

Internal tracking parameters used for split records which indicate the number of repeat QI's (RI), repeat QA's (RA), and repeat irrigated acres (RC), associated with this water right. These fields are blank in our example.

RECORDED WATER RIGHTS OF THE DEPARTMENT OF ECOLOGY REGION 2

PAGE 1

REPORT DATE 6/22/93

CONTROL #	SEC	OLD	OLD	OLD	DATE OF	S	C	A	CNTY	PERMIT	NAME	SOURCE OF APPROPRIATION	TRIBUTARY OF														
#	#	APPL	PERM	CERT	PRIORITY	T	C	M		DATE																	
#OF R	PTS	P	LOC.	OF	POD/POW	(CHG	C#)	PURPOSE	OF	USE	INST	C	R	S	ANNUAL	C	R	S	IRR	C	S	PRO-	TIME	OF	R	R	R
											QA	M	U	U	QA	M	U	U	AC	M	U	VISOS	USE		I	A	C

WATER RESOURCE INVENTORY AREA- 25

TOWNSHIP - 07 RANGE - 02 W

Groundwater - Water Right Info

104-93B

Surface Wtr List.

----- SELECTED TOWNSHIPS, RANGES AND SECTIONS TA ROW 1 TO 11 OF 11
 TSO COMMAND ==> PF2 = CANCEL, PF6 = END & SAVE

COMMAND	TOWNSHIP	RANGE	SEC-1	SEC-2
—	07	02W	06	06
—	07	03W	01	02
—	08	03W	17	22
—	08	03W	27	28
—	08	03W	34	36
—	08	04W	13	15
—	08	04W	21	22
—	08	04W	28	32
—	08	05W	22	22
—	08	05W	25	27
—	08	05W	35	36

***** BOTTOM OF DATA *****

#104-93A

(Ground water list)

----- SELECTED TOWNSHIPS, RANGES AND SECTIONS TA ROW 1 TO 13 OF 13
 TSO COMMAND ==> PF2 = CANCEL, PF6 = END & SAVE

COMMAND	TOWNSHIP	RANGE	SEC-1	SEC-2
—	08	02W	07	08
—	08	02W	16	22
—	08	02W	27	35
—	08	03W	11	12
—	08	03W	15	15
—	08	03W	21	28
—	08	03W	33	36
—	07	02W	03	10
—	07	02W	15	21
—	07	02W	29	30
—	07	03W	01	04
—	07	03W	09	15
—	07	03W	22	26

***** BOTTOM OF DATA *****

RECORDED WATER RIGHTS OF THE DEPARTMENT OF ECOLOGY										REGION 2	PAGE 1	REPORT DATE 6/22/93				
CONTROL #	SEC #	OLD APPL	OLD PERM	OLD CERT	DATE OF PRIORITY	S C A T C M	CNTY	PERMIT DATE	NAME	SOURCE OF APPROPRIATION TRIBUTARY OF						
#OF R PTS P	LOC. OF POD/POW	(CHG C#)	PURPOSE OF USE	USE TYPE	INST QI	C R S M U U	ANNUAL QA	C R S M U U	IRR AC	C S M U	PRO- VISOS	TIME OF USE	R R R I A C			
WATER RESOURCE INVENTORY AREA- 25																
TOWNSHIP - 08 RANGE - 03 W																

John Kesner -

Surface Water - Water Right to be determined

RECORDED WATER RIGHTS OF THE DEPARTMENT OF ECOLOGY										REGION 2	PAGE 2	REPORT DATE 6/22/93				
CONTROL #	SEC #	OLD APPL	OLD PERM	OLD CERT	DATE OF PRIORITY	S C A T C M	CNTY	PERMIT DATE	NAME	SOURCE OF APPROPRIATION TRIBUTARY OF						
#OF R PTS P	LOC. OF POD/POW	(CHG C#)	PURPOSE OF USE	USE TYPE	INST QI	C R S M U U	ANNUAL QA	C R S M U U	IRR AC	C S M U	PRO- VISOS	TIME OF USE	R R R I A C			
WATER RESOURCE INVENTORY AREA- 25																
TOWNSHIP - 08 RANGE - 03 W																
TOWNSHIP - 08 RANGE - 03 W																
S2-23201C	17				06/03/974											
1	GL-4				DOMESTIC SINGLE IRRIGATION			COWL 08/29/975	RICE HOWARD D	COAL CR SL		SU	COL R			
								C .05 C 2	1.0			SU	05011001			
								C .05 C 2	2.0			1.0				

RECORDED WATER RIGHTS OF THE DEPARTMENT OF ECOLOGY REGION 2

PAGE 2

REPORT DATE 6/22/93

CONTROL #	SEC #	OLD APPL	OLD PERM	OLD CERT	DATE OF PRIORITY	S C A T C M	CNTY	PERMIT DATE	NAME	SOURCE OF APPROPRIATION	TRIBUTARY OF		
# OF R PTS	P LOC.	OF POD/POW	(CHG C#)	PURPOSE OF USE	USE TYPE	INST QI	C R S M U	ANNUAL QA	C R S M U	IRR AC	C S PRO- M U VISOS	TIME OF USE	R R R I A C

WATER RESOURCE INVENTORY AREA- 25

TOWNSHIP - 07 RANGE - 02 W

TOWNSHIP - 07 RANGE - 02 W

G2-23674C 03 12/24/974
1 JAMES HUNTINGTON DLC IN NE4 DOMESTIC SINGLECOWL 02/20/976 COWLITZ CO PUB WKS WELL
75.0 G 2.0

RN

G2*08019C 04 08019 07509 05465 03/29/966
5 NATHANIEL STONE DLC 50 IRRIGATIONCOWL 06/23/966 MANKE A G WELLS
345.0 G 30.0

15.0

IS

G2*03255C 08 03255 03151 01732 06/04/953
1 WM. HUTCHINSON DLC COMMERCIAL/INDUSTRIALCOWL 12/18/953 CONTINENTAL GRAIN WELL
1000.0 G 550.0

AE

G2*00196S 09 00196 00138 11/23/935
1 NE4 SW4 DOMESTIC GENERAL HEAT EXCHANGECOWL / / LONG-BELL LBR CO WELL
290.0 G 2 203.0 2
290.0 G 2 203.0 2G2*00199S 09 00199 00139 11/23/935
1 NE4 NE4 SW4 DOMESTIC GENERAL HEAT EXCHANGECOWL / / LONG-BELL LBR CO WELL
290.0 G 2 203.0 2
290.0 G 2 203.0 2

TOWNSHIP - 08 RANGE - 02 W

G2*01064S 30 01064 00979 00/00/931
1 NE4SW4 COMMERCIAL/INDUSTRIALCOWL / / FRY MINT FARM WELL
100.0 G 14.0G2*00185S 31 00185 00155 11/02/931
1 ORLAND GEORGE DLC COMMERCIAL/INDUSTRIALCOWL / / WEYERHAEUSER CO WELL
700.0 G 1136.0G2*05006C 31 05006 04653 03257 09/17/958
1 ORLAND C GEORGE DLC COMMERCIAL/INDUSTRIALCOWL 12/05/958 WEYERHAEUSER CO WELL
200.0 G 320.0G2*06343C 31 06343 05998 05249 06/12/962
1 ORLAND GEORGE DLC HEAT EXCHANGE COMMERCIAL/INDUSTRIALCOWL 10/29/962 WEYERHAEUSER CO WELL
1000.0 G 2 1550.0 2
1000.0 G 2 1550.0 2

A

A

G2-21657C 31 11/21/973
1 CRUMLINE LADU DLC 46 NW4 SW4 COMMERCIAL/INDUSTRIALCOWL 05/17/974 WEYERHAEUSER CO WELL
1000.0 G 1600.0

RNMT

G2-23517C 31 12/11/974
1 NW4 SW4 COMMERCIAL/INDUSTRIALCOWL 01/02/976 WEYERHAEUSER CO WELL
450.0 G 1600.0

RNMT

G2*03236C 34 03236 03125 01707 05/25/953
1 NE4SW4 COMMERCIAL/INDUSTRIALCOWL 12/11/953 INTERSTATE PACKERS WELL
100.0 G 60.0

AE

PS

G2*05653C 34 05653 05316 04140 06/30/960
1 SE4SW4 HEAT EXCHANGECOWL 09/19/960 WESTPORT CHEMICAL WELL
300.0 G 480.0

A

TOWNSHIP - 08 RANGE - 03 W

G2*08309C 25 08309 07898 06184 09/20/966
1 CRUMLINE LADU DLC 38 COMMERCIAL/INDUSTRIALCOWL 05/24/967 REYNOLDS METALS CO WELL
2500.0 G 4000.0

A

G2*08367C 25 08367 07900 06186 10/27/966
1 CRUMLINE LADU DLC 38 COMMERCIAL/INDUSTRIALCOWL 05/24/967 REYNOLDS METALS CO WELL
3000.0 G 4800.0

A

G2*09127C 25 09127 08456 06427 12/26/967
1 CRUMLINE LADUE DLC 38 COMMERCIAL/INDUSTRIALCOWL 05/02/968 REYNOLDS METALS CO WELL
2150.0 G 3440.0

R

G2*02244C 36 02244 02042 01571 12/03/951
1 CRUMLINE LADUE DLC COMMERCIAL/INDUSTRIALCOWL 02/01/952 REYNOLDS METALS CO WELL
2500.0 G 4033.0G2*08310C 36 08310 07899 06185 09/20/966
1 CRUMLINE LADU DLC 38 COMMERCIAL/INDUSTRIALCOWL 05/24/967 REYNOLDS METALS CO WELL
2500.0 G 4000.0

A

G2*08368C 36 08368 07901 06187 10/27/966
1 CRUMLINE LADU DLC 38 COMMERCIAL/INDUSTRIALCOWL 05/24/967 REYNOLDS METALS CO WELL
3000.0 G 4800.0

A

RECORDED WATER RIGHTS OF THE DEPARTMENT OF ECOLOGY REGION 2

PAGE 3

REPORT DATE 6/22/93

CONTROL #	SEC	OLD	OLD	OLD	DATE OF	S C A	CNTY	PERMIT	NAME	SOURCE OF APPROPRIATION	TRIBUTARY OF	
#OF R	\$	APPL	PERM	CERT	PRIORITY	T C M		DATE				
PTS P	LOC. OF POD/POW	(CHG C#)	PURPOSE OF USE	USE	INST	C R S	ANNUAL	C R S	IRR	C S PRO-	TIME OF	R R R
				TYPE	QI	M U U	QA	M U U	AC	M U VISOS	USE	I A C

WATER RESOURCE INVENTORY AREA- 26

TOWNSHIP - 07 RANGE - 02 W

TOWNSHIP - 07 RANGE - 02 W

G2-26125C	03		03/24/982	COWL	08/23/982	KELSO	ELKS LODGE	WELLS				
3	SE4NE4; NE4SE4		IRRIGATION	C	500.0 G		381.0		80.0	\$R	00000000	2

G2-27265P	03		10/30/987	COWL	03/31/989	KELSO	ELKS LODGE	WELLS				
3	SE4NE4; NE4SE4		IRRIGATION	C	710.0 G 2		339.0		127.0	\$R	00000000	
			IRRIGATION	C	710.0 G 2		381.0	S	127.0	\$R		

TOWNSHIP - 08 RANGE - 02 W

G2-24762C	27		12/28/977	COWL	08/10/978	KELSO	CITY OF	WELL				
1	SE4SE4		DOMESTIC MUNICIPAL	C	2500.0 G		2800.0			MT		

G2-26829C	27		12/02/985	COWL	01/12/987	COWLITZ CO		WELL				
1	SW4SE4		HEAT EXCHANGE	C	350.0 G		403.0			RM		

G2-24204C	34		06/04/976	COWL	01/21/977	AMERICAN	CYANAMID	WELLS				
2	SE4 SW4		COMMERCIAL/INDUSTRIAL	C	1200.0 G		1920.0			RN		